

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

Claim 1 (currently amended): A method for the purification of plasmid DNA in an aqueous two-phase system, comprising:

- (a) providing a composition including a first polymer EO<sub>50</sub>PO<sub>50</sub>~~that exhibits inverse solubility characteristics~~, a second polymer Dextran T 500~~that is immiscible in the first polymer~~ and, optionally, a salt;
- (b) contacting said composition with an aqueous solution comprising plasmid DNA and RNA to form a mixture which contains from about 4.5% (w/w) EO<sub>50</sub>PO<sub>50</sub>/4.5% (w/w) Dextran T 500, to about 2.5% (w/w) EO<sub>50</sub>PO<sub>50</sub>/9% (w/w) Dextran T 500;
- (c) providing a phase separation wherein plasmid DNA is partitioned to a top aqueous phase while RNA partitions predominantly to a lower phase, and subsequently isolating the top aqueous phase;
- (d) increasing the temperature of the isolated top aqueous phase to a temperature above the cloud point of the first polymer and below a temperature where plasmid DNA is degraded and subsequently isolating a top aqueous phase so formed; and, optionally,

- (e) performing a chromatography step to recover the plasmid DNA from the isolated top phase of step (d).

Claims 2-6 (cancelled)

Claim 7 (currently amended): The method of claim 1 ~~claim 6~~, wherein the amount of the first polymer is about 4.5% (w/w) and the amount of the second polymer is about 4.5% (w/w) of the mixture in step (b) ~~composition provided in step (a)~~.

Claim 8 (previously presented): The method of claim 1, wherein the aqueous solution that includes plasmid DNA is a cell lysate, and wherein said method further comprises a step for desalting the cell lysate before step (b).

Claim 9 (previously presented): The method of claim 1, wherein the contacting according to step (b) involves mixing at room temperature.

Claim 10 (previously presented): The method of claim 1, wherein the isolation according to step (c) and/or step (d) is by centrifugation.

Claims 11-22 (cancelled)

Claim 23 (new): The method of claim 1, wherein the salt concentration in said composition in step (a) is at least ten times above that of the aqueous solution.

Claim 24 (new): The method of claim 7, wherein the salt concentration in said composition in step (a) is at least ten times above that of the aqueous solution.